Using $ for inline formula $f(x) = x^2$ or $f(x) = \frac{1}{1-x}$
Using equation for single equation

$$f(x) = x^2 \text{ with equation numbering} \tag{1}$$

(asterisk for turning-off auto numbering)

$$f(x) = x^2 \text{ without equation numbering}$$

$$f(x) = x^2 \text{ alternative: without equation numbering}$$

Using align for automatic alignment

$$\begin{aligned} x &= 1 \\ f(x) &= 1^2 = 1 \end{aligned}$$

Using integrals, fractions

$$\begin{aligned} f(x) &= \frac{1}{1-x} \\ g(x) &= \int_b^a x^2 dx \end{aligned}$$

Using matrix with scaled brackets

$$\begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$$

Using partitioned statements

$$\sum_{n=1}^{\infty} 1 + x + x^2 + \cdots + x^n = \begin{cases} \frac{1}{1-x}, & \text{if } x < 1 \\ \text{divergent}, & \text{if } x \geq 1 \end{cases}$$